

# SEQUENCE LISTING

<110> BIOGEN, INC.

<120> Interferon-Beta Fusion Proteins and Uses

<130> A064PCTSEQ

<140> PCT/US99/24200

<141> 1999-10-15

<150> 60/120,237

<151> 1999-02-16

<150> 60/104,491

<151> 1998-10-16

<160> 44

<170> PatentIn Ver. 2.0

<210> 1

<211> 1197

<212> DNA

<213> murine

<400> 1

```
atgagctaca acttgcttgg attcctacaa agaagcagca atttcagtgc tcagaagctc 60
ctgtggcaat tgaatgggag gcttgaatac tgcctcaagg acaggatgaa ctttgacatc 120
cctgaggaga ttaagcagct gcagcagttc cagaaggagg acgccgcatt gaccatctat 180
gagatgctcc agaacatctt tgctattttc agacaagatt catctagcac tggctggaat 240
gagactattg ttgagaacct cctgggctaatt gtctatcatc agataaacca tctgaagaca 300
gtcctggaag aaaaactgga gaaagaagat ttcaccaggg gaaaactcat gagcagtctg 360
cacctgaaaa gatattatgg gaggattctg cattacctga aggccaaagga gtacagtcac 420
tgtgctgga ccatagtcag agtggaaatc ctaaggaaact ttacttcat taacagactt 480
acaggttacc tccgaaacga cgatgatgac aaggtegaca aaactcacac atgcccaccg 540
tgcccagcac ctgaactcct ggggggaccg tcagtcttcc tcttcccccc aaaaccaag 600
gacaccctca tgatctcccg gaccctgag gtcacatcgc tgggtgtgga cgtgagccac 660
gaagaccctg aggtcaagtt caactgttac gtggacggcg tggaggtgca taatgccaag 720
acaaagccgc gggaggagca gtacaacagc acgtaccgtg tggtcagcgt cctcaccgtc 780
ctgcaccagg actggctgaa tggcaaggag tacaagtgca aggtctccaa caaagccctc 840
ccagccccc tggagaaaac catctccaaa gccaaagggc agccccgaga accacaggtg 900
tacacctgc ccccatcccg ggatgagctg accaagaacc aggtcagcct gacctgcctg 960
gtcaaaggct tctatcccag cgacatcgcc gtggagtggg agagcaatgg gcagccggag 1020
aacaactaca agaccagcc tccgtgttg gactccgacg gctccttctt cctctacagc 1080
aagctcaccg tggacaagag caggtggcag caggggaaac tcttctcatg ctccgtgatg 1140
catgaggctc tgcacaacca ctacacgcag aagagcctct ccctgtctcc cgggaaa 1197
```

<210> 2

<211> 399

<212> PRT

<213> murine

<400> 2

Met Ser Tyr Asn Leu Leu Gly Phe Leu Gln Arg Ser Ser Asn Phe Gln

1

5

10

15

Cys Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg Leu Glu Tyr Cys Leu  
20 25 30

Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu Ile Lys Gln Leu Gln  
35 40 45

Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile Tyr Glu Met Leu Gln  
50 55 60

Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser Ser Thr Gly Trp Asn  
65 70 75 80

Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val Tyr His Gln Ile Asn  
85 90 95

His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu Lys Glu Asp Phe Thr  
100 105 110

Arg Gly Lys Leu Met Ser Ser Leu His Leu Lys Arg Tyr Tyr Gly Arg  
115 120 125

Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser His Cys Ala Trp Thr  
130 135 140

Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr Phe Ile Asn Arg Leu  
145 150 155 160

Thr Gly Tyr Leu Arg Asn Asp Asp Asp Asp Lys Val Asp Lys Thr His  
165 170 175

Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro Ser Val  
180 185 190

Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr  
195 200 205

Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu  
210 215 220

Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys  
225 230 235 240

Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser  
245 250 255

Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys  
260 265 270

Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile  
275 280 285

Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro  
290 295 300

Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser Leu Thr Cys Leu

1000  
900  
800  
700  
600  
500  
400  
300  
200  
100  
0



Gln Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser Ser Thr Gly Trp  
85 90 95

Asn Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val Tyr His Gln Ile  
100 105 110

Asn His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu Lys Glu Asp Phe  
115 120 125

Thr Arg Gly Lys Leu Met Ser Ser Leu His Leu Lys Arg Tyr Tyr Gly  
130 135 140

Arg Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser His Cys Ala Trp  
145 150 155 160

Thr Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr Phe Ile Asn Arg  
165 170 175

Leu Thr Gly Tyr Leu Arg Asn  
180

<210> 5  
<211> 60  
<212> DNA  
<213> Homo sapiens

<400> 5  
gatctagcaa tgctgcctgt gctgcctcc ttgctgcctt gaatgggagg cttgaataact 60

<210> 6  
<211> 51  
<212> DNA  
<213> Homo sapiens

<400> 6  
tattatggga ggattctgca ttacctgaag gccaaaggagt actcacactg t 51

<210> 7  
<211> 76  
<212> DNA  
<213> Homo sapiens

<400> 7  
aattgaatgg gagggctgca gcttgcgctg cagacaggat gaactttgac atccctgagg 60  
agattaagca gctgca 76

<210> 8  
<211> 51  
<212> PRT  
<213> Homo sapiens

<400> 8  
Ala Ala Thr Thr Gly Ala Ala Thr Gly Gly Gly Ala Gly Gly Cys Thr  
1 5 10 15

Thr Gly Ala Ala Thr Ala Cys Thr Gly Cys Cys Thr Cys Ala Ala Gly  
20 25 30

Gly Ala Cys Ala Gly Gly Ala Thr Gly Ala Ala Cys Thr Thr Thr Gly  
35 40 45

Ala Cys Ala  
50

<210> 9  
<211> 60  
<212> DNA  
<213> Homo sapiens

<400> 9  
ttctccggag acgatgatga caagatgagc tacaacttgc ttggattcct acaaagaagc 60

<210> 10  
<211> 50  
<212> DNA  
<213> Homo sapiens

<400> 10  
cgtcagagct gaaatcctag caaactttgc attcattgca agacttacag 50

<210> 11  
<211> 47  
<212> DNA  
<213> Homo sapiens

<400> 11  
ggtgggtctca catgagctac aacttgcttg gattcctaca aagaage 47

<210> 12  
<211> 50  
<212> DNA  
<213> Homo sapiens

<400> 12  
gccctcgagt cgacctgtgc atcatcgtcg ttccggagggt aacctgtaag 50

<210> 13  
<211> 21  
<212> DNA  
<213> Homo sapiens

<400> 13  
caagcttgct agcggccgcg g 21

<210> 14  
<211> 28  
<212> DNA  
<213> Homo sapiens

<400> 14

ggtggtctca catggcttga gaagctgc 28

<210> 15  
<211> 20  
<212> DNA  
<213> Homo sapiens

<400> 15  
aggtsmarct gcagsagtcw 20

<210> 16  
<211> 36  
<212> DNA  
<213> Homo sapiens

<400> 16  
ctgagctcat ttacccggag tccgggagaa gctctt 36

<210> 17  
<211> 33  
<212> DNA  
<213> Homo sapiens

<400> 17  
agcttgctag cggccgcggc ctactggct tca 33

<210> 18  
<211> 37  
<212> DNA  
<213> Homo sapiens

<400> 18  
atacgcgtcg acgtttcggg ggtaacatgt aagtctg 37

<210> 19  
<211> 33  
<212> DNA  
<213> Homo sapiens

<400> 19  
agcttgctag cggccgcggc ctactggct tca 33

<210> 20  
<211> 51  
<212> DNA  
<213> Homo sapiens

<400> 20  
tacacgtcga cgctgccacc accgccgttt cggaggtaac atgtaagtct g 51

<210> 21  
<211> 39  
<212> DNA  
<213> Homo sapiens

<400> 21

gccgctcgag ttatcagttt cggaggtaac ctgtaagtc

39

<210> 22

<211> 72

<212> DNA

<213> Homo sapiens

<400> 22

ggaatgcttc aattgttgct gcactcctga gcaatgtcta tcatcagata aaccatctga 60  
agacagtct ag 72

<210> 23

<211> 72

<212> DNA

<213> Homo sapiens

<400> 23

ggaatgagac cattgttgag aacctcctgg ctaatgtcgc tcatcagata gcacatctgg 60  
ctgcagtct ag 72

<210> 24

<211> 44

<212> DNA

<213> Homo sapiens

<400> 24

ctagctgcaa aactggctgc agctgatttc accaggggaa aact 44

<210> 25

<211> 69

<212> DNA

<213> Homo sapiens

<400> 25

ctagaagaaa aactggagaa agaagcagct accgctggaa aagcaatgag cgcgctgcac 60  
ctgaaaaga 69

<210> 26

<211> 51

<212> DNA

<213> Homo sapiens

<400> 26

tattatggga ggattctgca ttacctgaag gccaggagct actcacactg t 51

<210> 27

<211> 76

<212> DNA

<213> Homo sapiens

<400> 27

catgagcagt ctgcacctga aaagatatta tggggcaatt gctgcatacc tggcagccaa 60  
ggagtactca cactgt 76

<210> 28

<211> 87

<212> DNA  
<213> Homo sapiens

<400> 28  
catgagcagt ctgcacctga aaagatatta tgggaggatt ctgcattacc tgaaggccgc 60  
tgcatactca cactgtgcct ggacgat 87

<210> 29  
<211> 87  
<212> DNA  
<213> Homo sapiens

<400> 29  
catgagcagt ctgcacctga aaagatatta tgggaggatt ctgcattacc tgaaggcaaa 60  
ggagtacgct gcatgtgcct ggacgat 87

<210> 30  
<211> 50  
<212> DNA  
<213> Homo sapiens

<400> 30  
cgtcagagct gaaatcctag caaactttgc attcattgca agacttacag 50

<210> 31  
<211> 47  
<212> DNA  
<213> Homo sapiens

<400> 31  
ggtggtctca catgagctac aacttgcttg gattcctaca aagaagc 47

<210> 32  
<211> 50  
<212> DNA  
<213> Homo sapiens

<400> 32  
gccctcgagt cgacctgtgc atcatcgtcg ttccggaggt aacctgtaag 50

<210> 33  
<211> 21  
<212> DNA  
<213> Homo sapiens

<400> 33  
caagcttgct agcggccgcg g 21

<210> 34  
<211> 28  
<212> DNA  
<213> Homo sapiens

<400> 34  
ggtggtctca catggcttga gaagctgc 28



<210> 35  
<211> 20  
<212> DNA  
<213> murine

<400> 35  
aggtsmarct gcagsagtcw 20

<210> 36  
<211> 36  
<212> DNA  
<213> murine

<400> 36  
ctgagctcat ttacccggag tccgggagaa gctctt 36

<210> 37  
<211> 33  
<212> DNA  
<213> Homo sapiens

<400> 37  
agcttgctag cggccgcggc ctactggct tca 33

<210> 38  
<211> 37  
<212> DNA  
<213> Homo sapiens

<400> 38  
atacgcgtcg acgttcgga ggtaacatgt aagtctg 37

<210> 39  
<211> 33  
<212> DNA  
<213> Homo sapiens

<400> 39  
agcttgctag cggccgcggc ctactggct tca 33

<210> 40  
<211> 51  
<212> DNA  
<213> Homo sapiens

<400> 40  
tacacgtcga cgtgccacc accgccgtt cggaggtaac atgtaagtct g 51

<210> 41  
<211> 1257  
<212> DNA  
<213> Homo sapiens

<400> 41  
atgcctggga agatggctgt gatccttgga gcctcaaata tactttgat aatgtttgca 60  
gcttctcaag ccatgagcta caacttgctt ggattctac aaagaagcag caatttcag 120

tgtcagaagc tcctgtggca attgaatggg aggcctgaat actgcctcaa ggacaggatg 180  
 aactttgaca tccctgagga gattaagcag ctgcagcagt tccagaagga ggacgccgca 240  
 ttgacctatc atgagatgct ccagaacatc ttgtctattt tcagacaaga ttcattctagc 300  
 actggctgga atgagactat tgttgagaac ctctgggcta atgtctatca tcagataaac 360  
 catctgaaga cagtcctgga agaaaaactg gagaaagaag atttcaccag gggaaaactc 420  
 atgagcagtc tgcacctgaa aagatattat gggaggattc tgcattacct gaaggccaag 480  
 gagtacagtc actgtgctg gaccatagtc agagtggaaa tcctaaggaa cttttacttc 540  
 attaacagac ttacatgta cctccgaaac gtcgacaaaa ctcacacatg cccaccgtgc 600  
 ccagcacctg aactcctggg gggaccgtca gtcttctct tcccccaaa acccaaggac 660  
 accctcatga tctcccgac cctgaggtc acatgcgtgg tgggtggagt gagccacgaa 720  
 gacctgagg tcaagttcaa ctgttacgtg gacggcgtgg aggtgcataa tgccaagaca 780  
 aagccgcggg aggagcagta caacagcacg taccgtgtgg tcagcgtcct caccgtcctg 840  
 caccaggact ggctgaatgg caaggagtac aagtgcagg tctccaacaa agccctccca 900  
 gcccccatcg agaaaacct ctcgaagcc aaagggcagc cccgagaacc acaggtgtac 960  
 accctcccc catccggga tgagctgacc aagaaccagg tcagcctgac ctgcctggtc 1020  
 aaaggtctt atccagcga catgcctgt gagtgggaga gcaatgggca gccggagaa 1080  
 aactacaaga ccacgcctc cgtgttgac tccgacgct ccttctctct ctacagcaag 1140  
 ctcaccgtgg acaagagcag gtggcagcag gggaacgtct tctcatgctc cgtgatgcat 1200  
 gaggtctgc acaaccacta cagcagaag agcctctccc tgtctcccgg gaaatga 1257

<210> 42

<211> 418

<212> PRT

<213> Homo sapiens

<400> 42

Met Pro Gly Lys Met Val Val Ile Leu Gly Ala Ser Asn Ile Leu Trp

1 5 10 15

Ile Met Phe Ala Ala Ser Gln Ala Met Ser Tyr Asn Leu Leu Gly Phe

20 25 30

Leu Gln Arg Ser Ser Asn Phe Gln Cys Gln Lys Leu Leu Trp Gln Leu

35 40 45

Asn Gly Arg Leu Glu Tyr Cys Leu Lys Asp Arg Met Asn Phe Asp Ile

50 55 60

Pro Glu Glu Ile Lys Gln Leu Gln Gln Phe Gln Lys Glu Asp Ala Ala

65 70 75 80

Leu Thr Ile Tyr Glu Met Leu Gln Asn Ile Phe Ala Ile Phe Arg Gln

85 90 95

Asp Ser Ser Ser Thr Gly Trp Asn Glu Thr Ile Val Glu Asn Leu Leu

100 105 110

Ala Asn Val Tyr His Gln Ile Asn His Leu Lys Thr Val Leu Glu Glu

115 120 125

Lys Leu Glu Lys Glu Asp Phe Thr Arg Gly Lys Leu Met Ser Ser Leu

130 135 140

His Leu Lys Arg Tyr Tyr Gly Arg Ile Leu His Tyr Leu Lys Ala Lys

145 150 155 160

Glu Tyr Ser His Cys Ala Trp Thr Ile Val Arg Val Glu Ile Leu Arg  
165 170 175

Asn Phe Tyr Phe Ile Asn Arg Leu Thr Cys Tyr Leu Arg Asn Val Asp  
180 185 190

Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly  
195 200 205

Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile  
210 215 220

Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu  
225 230 235 240

Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His  
245 250 255

Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg  
260 265 270

Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys  
275 280 285

Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu  
290 295 300

Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr  
305 310 315 320

Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser Leu  
325 330 335

Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp  
340 345 350

Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val  
355 360 365

Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp  
370 375 380

Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His  
385 390 395 400

Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro  
405 410 415

Gly Lys

<210> 43

<211> 1272

<212> DNA

<213> Homo sapiens

<400> 43

atgcctggga agatggctgt gatccttggga gcctcaaata tactttggat aatgtttgca 60  
gttcttcaag ccatgagcta caacttgctt ggattcctac aaagaagcag caattttcag 120  
tgtcagaagc tcctgtggga attgaatggg aggcttgaat actgcctcaa ggacaggatg 180  
aaccttgaca tccttgagga gattaagcag ctgcagcagt tccagaagga ggacgccgca 240  
ttgacctct atgagatgct ccagaacatc ttgtctattt tcagacaaga ttcatttagc 300  
actggctgga atgagactat tgttgagaac ctctgggcta atgtctatca tcagataaac 360  
catctgaaga cagtcttggga agaaaaactg gagaaagaag atttcaccag gggaaaactc 420  
atgagcagtc tgcacctgaa aagatattat gggaggattc tgcattacct gaaggccaag 480  
gagtacagtc actgtgcttg gaccatagtc agagtggaaa tcctaaggaa cttttacttc 540  
attaacagac ttacatgta cctccgaaac ggcggtggtg gcagcgtcga caaaactcac 600  
acatgcccac cgtgccagc acctgaactc ctggggggac cgtcagtcct cctctcccc 660  
ccaaaacca aggacacct catgatctcc cggacccctg aggtcacatg cgtggtggtg 720  
gacgtgagcc acgaagaccc tgaggtcaag ttcaactggt acgtggacgg cgtggaggtg 780  
cataatgcca agacaagcc gcgggaggag cagtacaaca gcacgtaccg tgtggtcagc 840  
gtctcacccg tctgcacca ggactggctg aatggcaagg agtacaagtg caaggtctcc 900  
aacaagccc tccagcccc catcgagaaa accatctcca aagccaaagg gcagccccga 960  
gaaccacagg tgtacacct gcccctatcc cgggatgagc tgaccaagaa ccaggtcagc 1020  
ctgacctgcc tggctaaagg cttctatccc agcgacatcg ccgtggagtg ggagagcaat 1080  
gggcagccgg agaacaacta caagaccag cctccctgtg tggactccga cggctcctc 1140  
ttctctaca gcaagctcac cgtggacaag agcaggtggc agcaggggaa cgtcttctca 1200  
tgctccgtga tgcattgagc tctgcacaac cactacacgc agaagagcct cctcctgtct 1260  
cccgggaaat ga 1272

<210> 44

<211> 423

<212> PRT

<213> Homo sapiens

<400> 44

Met Pro Gly Lys Met Val Val Ile Leu Gly Ala Ser Asn Ile Leu Trp

1 5 10 15

Ile Met Phe Ala Ala Ser Gln Ala Met Ser Tyr Asn Leu Leu Gly Phe

20 25 30

Leu Gln Arg Ser Ser Asn Phe Gln Cys Gln Lys Leu Leu Trp Gln Leu

35 40 45

Asn Gly Arg Leu Glu Tyr Cys Leu Lys Asp Arg Met Asn Phe Asp Ile

50 55 60

Pro Glu Glu Ile Lys Gln Leu Gln Gln Phe Gln Lys Glu Asp Ala Ala

65 70 75 80

Leu Thr Ile Tyr Glu Met Leu Gln Asn Ile Phe Ala Ile Phe Arg Gln

85 90 95

Asp Ser Ser Ser Thr Gly Trp Asn Glu Thr Ile Val Glu Asn Leu Leu

100 105 110

Ala Asn Val Tyr His Gln Ile Asn His Leu Lys Thr Val Leu Glu Glu

115 120 125

Lys Leu Glu Lys Glu Asp Phe Thr Arg Gly Lys Leu Met Ser Ser Leu

130

135

140

His Leu Lys Arg Tyr Tyr Gly Arg Ile Leu His Tyr Leu Lys Ala Lys  
145 150 155 160

Glu Tyr Ser His Cys Ala Trp Thr Ile Val Arg Val Glu Ile Leu Arg  
165 170 175

Asn Phe Tyr Phe Ile Asn Arg Leu Thr Cys Tyr Leu Arg Asn Gly Gly  
180 185 190

Gly Gly Ser Val Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro  
195 200 205

Glu Leu Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys  
210 215 220

Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val  
225 230 235 240

Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp  
245 250 255

Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr  
260 265 270

Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp  
275 280 285

Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu  
290 295 300

Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg  
305 310 315 320

Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys  
325 330 335

Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp  
340 345 350

Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys  
355 360 365

Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser  
370 375 380

Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser  
385 390 395 400

Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser  
405 410 415

Leu Ser Leu Ser Pro Gly Lys  
420